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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,231	10/23/2003	Volkmar Hamacher	P03,0441	8391

26574 7590 03/12/2007

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EXAMINER	
PAUL, DISLER	
ART UNIT	**PAPER NUMBER**
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/692,231	HAMACHER ET AL.	
	Examiner	Art Unit	
	Disler Paul	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/17/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The independent claims 1,11,24 are confusing and ambiguous, the Applicant claim in the independent claims that of the receiving said acoustic signal at an auditory canal of the test object without any hearing device thereby obtaining a second received signal fail to correspond with the figures in which all the microphones is seen *as being part to the hearing aid*.

Thus the examiner read the independent as being receiving the acoustic signal at an auditory canal of the test object, thereby obtaining a second received signal. Since in either case both microphones are part of the hearing aid.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-9 and 11-19 and 24-26 and 31-33 rejected under 35 U.S.C. 103(a) as being unpatentable over Arndt et al.("US 6,954,535 B1") and Killion ("US 2002/0057815 A1") .

Re claim 1, Arndt et al. disclosed a method for adjusting a hearing aid device adapted to be worn at the body of a person, said hearing aid device having a microphone system that, when said hearing-aid device is worn, and having a signal processor connected to a filter arrangement, and to said microphone system ("*Fig.1-2;page 3 line 18-14,page 3 line 33-37/hearing aid*

is worn at the ear"), comprising the steps of: subjecting a test object to an acoustic signal originating from an external signal source remote from the test object("*fig.1(11-14)*"); receiving the acoustic signal at the test object at a location on the test object corresponding to a location on the person at which the microphone system is disposed when the hearing aid device is worn by the person, thereby obtaining a first received signal("*fig.1(1)-first microphone at fig.2(2).*"); also receiving said acoustic signal at an auditory canal of the test object, thereby obtaining a second received signal ("*fig.2(3)*"); determining a correction function from said first and second received signals that, when applied to said first received signal, at least approximately converts said first received signal into said second received signal; and adjusting said filter arrangement in said signal processor to apply said correction function to said microphone signal before processing in said signal processor("*Fig.2(4,5),page 2 line 20-21* ").

While Arndt et al. teach the above, He fail to disclose the hearing aid is disposed outside of the auditory canals of the person, However, Killion disclose a hearing aid in which the hearing aid is disposed outside of the auditory canals of the person ("*page 1[0004] line 8; page 1[0005] line 6*") for purpose of improving the signal-to-noise ratio by rejecting a portion of the noise coming from the behind the listener, thus taking the combined teaching of Arndt et al. and now Killion as a whole, it would have been obvious for one of the ordinary skill in the art to modify Arndt et al. by incorporating the hearing aid is disposed outside of the auditory canals of the person for purpose of improving the signal-to-noise ratio by rejecting a portion of the noise coming from the behind the listener as taught by Killion.

Re claim 2, a method as claimed in claim 1 comprising employing a synthetic head as said test object ("*page 1 line 3:artificial head*").

Re claim 3, a method as claimed in claim 1, comprising employing a person as said test object("*page 3 line 19/head of a person*").

Re claim 4, has been analyzed and rejected with respect to claim 3 respectively.

Re claim 5, a method as claimed in claim 1, comprising subjecting said test object to respective acoustic signals from said signal source at different alignments of said signal source relative to said test object, and determining said correction function for each of said different alignments ("*page 1 line 38-41/object pick up at microphone and source on different directions and further page 1 line 47-48/filters optimized directional characteristics*").

Re claim 6, a method as claimed in claim 5, comprising employing, as said microphone system, a system having at least two microphones ("*fig.2/(2,3)*").

Re claim 8, a method as claimed in claim 6, wherein each of said at least two microphones has an electrical signal path associated therewith, and comprising forming said filter arrangement from a plurality of filters

respectively electrically connected in said signal paths("*fig.2(2,3) associated with (4,5)*").

Re claim 9, a method as claimed in claim 8, wherein each of said filters has a filter function, and adjusting the respective filter functions so that said filter functions, in combination, implement said correction function dependent on said different alignments of said signal source relative to said test object("*fig.2(4,5) may be adjusted at (9) respectively and further see page 2 line 54-55*").

Re claim 11, a method for operating a hearing aid device adapted to be worn on the body of a user, said hearing aid device having a microphone system that, when worn by the user, and having a signal processing unit("*Fig.1-2 with processor (6);page 3 line 18-14,page 3 line 33-37/hearing aid is worn at the ear*"), said method comprising the steps of: receiving, with said microphone system, an acoustic signal originating from a signal source remote from the microphone system as an acoustic input signal, and in said microphone system, transducing said acoustic input signal into an electrical microphone signal("*fig.1(11-14) and fig.2(2)*"); at least partially correcting said signal error with respect to an acoustic input signal that said acoustic signal would generate in an auditory canal of said user dependent on a direction of said signal source relative to the head of the user("*fig.2(3)*"), thereby generating a corrected signal selected from the group consisting of a corrected microphone signal and a corrected electrical signal ensuing from said microphone signal("*Fig.2(4,5),page 2 line 20-21*"); and processing said corrected signal in said signal processing unit to obtain

a processed signal, and transducing the processed signal to produce an output acoustic signal, and supplying said output acoustic signal to said user("*fig.2(6,7)*"). ").

While Arndt et al. teach the above, He fail to disclose the hearing aid is disposed outside of the auditory canals of the person, However, Killion disclose a hearing aid in which the hearing aid is disposed outside of the auditory canals of the person ("*page 1[0004] line 8; page 1[0005] line 6*") for purpose of improving the signal-to-noise ratio by rejecting a portion of the noise coming from the behind the listener, thus taking the combined teaching of Arndt et al. and now Killion as a whole, it would have been obvious for one of the ordinary skill in the art to modify Arndt et al. by incorporating the hearing aid is disposed outside of the auditory canals of the person for purpose of improving the signal-to-noise ratio by rejecting a portion of the noise coming from the behind the listener as taught by Killion.

While, the combined teaching of Arndt et al. and Killion as a whole, fail to explicitly disclose the electrical microphone signal containing a signal error arising due to said microphone system being disposed outside of the auditory canals of the user, Arndt et al. and Wonyoung as a whole did disclose of the two-omni directional microphones which pick up sound at different directions ("*Arndt, page 1 line 13-15*") and further teach of the sound pick up outside of the auditory canal in one direction ("*page 1[0004] line 8; page 1[0005] line 6*") and the sound being pick up at another direction with microphone install at the on the head of the user

("Arndt,fig.1") and the filters for each directional microphones to enable error correction based on the directional different signal path ("*Arndt,fig.2(4,5)*"), thus with the above disclosure, it is inherent that the microphones signals must contain such a signal error arising due to said microphone system being disposed outside of the auditory canals of the user.

Re claim 12, a method as claimed in claim 11, wherein said hearing-aid device comprises a signal path containing a filter, and comprising correcting said error signal by adjusting a filter function of said filter ("*Arndt,figl.2(4,5) adjusted by (9),page 3 line 54-58 and further page 2 line 54-55*").

Re claim 13, a method as claimed in claim 12, wherein said microphone system comprises at least two microphones, and connecting said filter in said filter path following said at least two microphones ("*Arndt,fig.2(2,3) with (4,5)*").

Re claim 14, a method as claimed in claim 12, wherein said hearing-aid device is adapted to be worn on the head of the user("*Arndt,page 3 line 19*"), and comprising correcting said error signal by adjusting said filter function dependent on a relative alignment between said microphone system and the head of the user *("Arndt,page 1 line 64-67")*

Re claim 15, a method as claimed in claim 14, comprising identifying an at least approximate direction of a location of said signal source relative to the head of the user, and correcting said signal error by adjusting said filter function dependent on said direction ("*page 1 line 38-41/object pick up at microphone and source on different directions and further page 1 line 47-48/filters optimized directional characteristics*")..

Re claim 16, a method as claimed in claim 15, comprising identifying said direction using said microphone system ("*page 2 line 17-20*").

Re claim 17, a method as claimed in claim 16, comprising generating a plurality of acoustic signals respectively from a plurality of signal sources remote from said microphone system ("*fig.1(11-14*") and, using said microphone system, determining a direction of a location of the signal source that produced one of said input signals having predetermined properties ("*page 4 line 18-21/stored and evaluate denotes predetermined properties*").

Re claim 18, a method as claimed in claim 15, comprising identifying said direction as a projection of the signal source in a horizontal plane in which the head of the user is disposed ("*Arndt,fig.1*").

Re claim 19, the method as claimed in claim 15, comprising identifying said direction at least approximately in three-dimensions ("*page 1 line 14/omnidirections include also three-dimensionals*").

Re claim 24, with respect to a hearing aid device adapted to be worn on the body of a user, has been analyzed and rejected with respect to claim 11.

Re claims 25-26 have been analyzed and rejected with respect to claim 12-13 respectively.

Re claim 31, a hearing aid device as claimed in claim 25, comprising a detector for detecting a direction at which said signal source is located relative to the head of the user ("*fig.2-with detectors(2,3)*"), and wherein said filter arrangement is adaptable dependent on said direction("*directive detectors couple independently each with fig.2(4,5)*").

Re claim 32, has been analyzed and rejected with respect to claim 31.

Re claim 33, a hearing aid device as claimed in claim 32, wherein said filter arrangement is connected subsequent to at least one of said directional microphones ("*fig.2(4,5)*").

3. Claims 7,10 and 20-23 and 27-30 and 34-35 rejected under 35 U.S.C. 103(a) as being unpatentable over Arndt et al.("US 6,954,535 B1") and Killion ("US 2002/0057815 A1") and further in view of Hohn ("6,424,721 B1").

Re claim 7, a method as claimed in claim 6, comprising forming said microphone system from a plurality of directional microphones, and forming each of said directional microphones by electrically connecting at least two omni-directional microphones("*page 1 line 13-18,fig.2/microphone are electrically connected*"). However, the combined teaching of Arndt et al. and Killion as a whole, fail to teach of the microphones respectively having different preferred reception directions, But Hohn discloses of a hearing aid in which the microphones have respective different preferred reception directions ("*col.2 line 10-13; fig.3-5; col.2 line 1*") for purpose of allowing useful sound incident taken from the different principal direction into consideration during operation. Thus, taking the combined teaching of Arndt et al. and Killion and now Hohn as a whole, it would have been obvious for one of the ordinary skill in the art to modify the teaching of Arndt et al. and Yang as a whole, by incorporating the microphones with respectively different preferred reception directions for the purpose of allowing useful sound incident taken from the different principal direction into consideration during operation as taught by Hohn.

Re claim 10, a method as claimed in claim 1, comprising employing, as said microphone system, a system having at least two directional microphones having, and determining said correction function for each of a plurality of different alignments of said signal source relative to said test object, identifying one of said directional microphones, and implementing said correction function by adjusting a filter function of a filter electrically

connected following said one of said directional microphones("*page 1 line 38-41/object pick up at microphone and source on different directions and further page 1 line 47-48/filters optimized directional characteristics and further fig.2(4,5) may be adjusted at (9) respectively*"). However, the combined teaching of Arndt et al. and Killion as a whole, fail to teach of the microphones respectively having different preferred reception directions, But Hohn discloses of a hearing aid in which the microphones have respective different preferred reception directions ("*col.2 line 10-13; fig.3-5; col.2 line 1*") for purpose of allowing useful sound incident taken from the different principal direction into consideration during operation. Thus, taking the combined teaching of Arndt et al. and Killion and now Hohn as a whole, it would have been obvious for one of the ordinary skill in the art to modify the teaching of Arndt et al. and Killion as a whole, by incorporating the microphones with respectively different preferred reception directions for the purpose of allowing useful sound incident taken from the different principal direction into consideration during operation as taught by Hohn.

The combined teaching of Arndt et al. and Killion and Hohn as a whole, further teach of the directional microphones having a preferred reception direction proceeding in a direction toward said signal source("*Hohn, col.1 line 20-25*")

Re claim 20, a method as claimed in claim 11, comprising employing, as said microphone system, a system comprising at least two directional

microphones, connecting a filter arrangement in a signal path subsequent to the directional microphones, and correcting said error signal by optimizing a filter function of said filter arrangement("*page 1 line 13-18, fig.2(2,3) corresponding (4,5) and further page 4 line 1-8*"). However, the combined teaching of Arndt et al. and Killion as a whole, fail to teach the microphones with respectively different preferred reception directions, But Hohn discloses of a hearing aid in which the microphones have respective different preferred reception directions ("*col.2 line 10-13; fig.3-5; col.2 line 1*") for purpose of allowing useful sound incident taken from the different principal direction into consideration during operation. Thus, taking the combined teaching of Arndt et al. and Killion and now Hohn as a whole, it would have been obvious for one of the ordinary skill in the art to modify the teaching of Arndt et al. and Killion as a whole, by incorporating the microphones with respectively different preferred reception directions for the purpose of allowing useful sound incident taken from the different principal direction into consideration during operation as taught by Hohn.

Re claim 21, the combined teaching of Arndt et al. and Killion and Hohn as a whole, teach the method as claimed in claim 20, comprising employing said at least two directional microphones with respective preferred reception directions that at least approximately define a horizontal plane ("*Hohn, at fig.3.*").

Re claim 22, the combined teaching of Arndt et al. and Killion as a whole teach of the method as claimed in claim 21, the system comprising at least three directional microphones with a third of said at least three directional microphones having a preferred reception direction proceeding at

least approximately in a vertical direction ("*Hohn,fig.3-5; col. 2 line 10-13; col. 2 line 1*").

Re claim 23, the combined teaching of Arndt et al. and Killion and Hohn as a whole, teach of the method as claimed in claim 20, further comprising employing one of said at least two directional microphones, a directional microphone having an adjustable preferred reception direction ("*Hohn, col. 2 line 55-59/mics can be adapted to auditory situation*"), and adapting said filter function dependent on adjustment of said preferred reception direction("*Arndt, fig.2(2,3) and (4,5)*") of said third of said at least three microphones("*Hohn,fig.3*").

Re claim 27, has been analyzed and rejected with respect to claim 20.

Re claim 28, the combined teaching of Arndt et al. and Killion and Hohn as a whole, teach of the hearing aid device as claimed in claim 27, wherein each of said directional microphones is comprised by a plurality of omni-directional microphones electrically connected to each other ("*Arndt,page 1 line 13-15*").

Re claim 29, a hearing aid device as claimed in claim 27, wherein the respective preferred reception directions of said at least two directional microphones at least approximately define a horizontal plane("*Hohn, fig.3.*").

Re claim 30, has been analyzed and rejected with respect to claim 22.

Re claim 34, a hearing aid device as claimed in claim 33, wherein said filter is adapted by optimizing said filter function with regard to the preferred reception direction of said at least one directional microphone ("*page 1 line 45-48; page 2 line 54-58*").

Re claim 35, has been analyzed and rejected with respect to claim 23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-272-2222. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Re claim 30, has been analyzed and rejected with respect to claim 22.

Re claim 34, a hearing aid device as claimed in claim 33, wherein said filter is adapted by optimizing said filter function with regard to the preferred reception direction of said at least one directional microphone ("*page 1 line 45-48; page 2 line 54-58*").

Re claim 35, has been analyzed and rejected with respect to claim 23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-272-2222. The examiner can normally be reached on 7:30-5:00.

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